

NP3151W Installation Guide

Desktop and Ceiling Mount

v 1.0

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Product Description

Type:	3 panel LCD projector, 0.74 p-Si TFT w/MLA	Dimensions:	15.7”(W) x 5.9”(H) x 14.1”(D)
Resolution:	1280 x 800 (16:10) / 1067 x 800 (4:3)	Weight:	16.1 lbs
Fan Noise:	38 dB / 31dB @ 1 meter	Brightness:	NP3151W – 4000 Lumens
Power Consumption:	490W (max)	BTU's:	1672 BTU/hour
Network Ready, integrated wired and wireless adapter		Manual:	Lens Shift, Horizontal & Vertical /Zoom/ Focus

Lens Specifications

NP01FL: Throw Ratio: ~ 0.8:1 Screen Sizes: 38”-143”	Focal Length: 13.2mm F/#:2.3
NP02FL: Throw Ratio: 1.18 - 1.54:1 Screen Sizes: 29” - 476”	Focal Length: 19.42 - 25.26mm F/#:2.2
Standard: Throw Ratio: 1.5 - 2.0:1 Screen Sizes: 29” – 476 ”	Focal Length: 24.4 - 32.5mm F/#:1.7
NP03FL: Throw Ratio: 1.94 - 3.07:1 Screen Sizes: 38” - 476”	Focal Length: 31.6 – 50.2mm F/#:2.2
NP04FL: Throw Ratio: 2.98 -4.77:1 Screen Sizes: 57” - 476”	Focal Length: 48.8 - 77.6mm F/#:2.2
NP05FL: Throw Ratio: 4.62 - 7.02:1 Screen Sizes: 57” - 476”	Focal Length: 76.6 - 116.5mm F/#:2.2

Screen/Aspect Ratio

16:10, 16:9 and 4:3 screens are fully supported with proper aspect ratio control for both type sources using NEC developed scaling technology. Menu selections have settings for each screen type and aspect ratio control for each source type.

Notes

- For screen sizes not indicated on the projection tables, use the formulas below.
If the figures on the tables do not match the results of formulas, use the figures in the table.
- All calculations are based on 4:3 aspect ratio.
- Distances are in inches, for millimeters multiply by 25.4.
- Distances may vary ±5%.

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Formulas

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width "W" for a 16:10 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:10 screens:

Projection Formulas:

- NP01FL:** C = 0.8260W – 1.33
- NP02ZL:** C(Wide) = 1.2120W – 1.798 ----- C(Tele) = 1.5770W – 1.795
- Standard:** C(Wide) = 1.5330W – 2.022 ----- C(Tele) = 2.0390W – 2.015
- NP03ZL:** C(Wide) = 1.9910W – 2.830 ----- C(Tele) = 3.1460W – 2.840
- NP04ZL:** C(Wide) = 3.0300W – 4.830 ----- C(Tele) = 4.8465W – 4.850
- NP05ZL:** C(Wide) = 4.7888W – 7.625 ----- C(Tele) = 7.2779W – 7.645

Definitions:

- W = Image Width
- H = Image Height (size)
- C = Throw distance

16:10 Screen Formulas:

- W = H x 16/10
- H = W x 10/16
- Screen Diagonal = W x 18.868/16

Note: Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

Distance Chart for popular 16:10 screens

Image Size (16:10) on a (16:10) screen			Rear Lens	Zoom Lenses					
Diagonal	Width(W)	Height (H)	NP01FL	Standard	NP02ZL	NP03ZL	NP04ZL	NP05ZL	
inches	inches	inches	0.8:1	1.5 - 2.0:1	1.18 - 1.54:1	1.94 - 3.07:1	2.98 - 4.77:1	4.62 - 7.02:1	
85	72	45	58	108 - 145	85 - 112	141 - 224	213 - 344	337 - 516	
92	78	49	63	118 - 158	93 - 122	153 - 244	233 - 375	368 - 563	
98	83	52	67	126 - 168	99 - 129	163 - 259	247 - 398	391 - 598	
102	86	54	70	130 - 174	103 - 134	169 - 269	257 - 414	406 - 621	
111	94	59	76	142 - 190	112 - 147	184 - 293	280 - 451	443 - 677	
113	96	60	78	145 - 194	115 - 150	188 - 299	286 - 460	452 - 691	
123	104	65	85	157 - 210	124 - 162	204 - 324	310 - 499	490 - 749	
125	106	66	86	160 - 213	126 - 165	207 - 329	315 - 507	498 - 761	
147	125	78	NA	189 - 252	149 - 195	246 - 390	373 - 600	590 - 901	
149	126	79	NA	192 - 256	151 - 198	249 - 395	378 - 608	598 - 912	
213	181	113	NA	275 - 367	217 - 283	357 - 566	543 - 871	858 - 1308	
255	216	135	NA	329 - 438	260 - 339	427 - 677	650 - 1042	1027 - 1564	
340	288	180	NA	439 - 585	347 - 452	571 - 903	868 - 1391	1372 - 2088	
425	360	225	NA	550 - 732	435 - 566	714 - 1130	1086 - 1740	1716 - 2612	

Note: For screen sizes not indicated on the projection tables, use the formulas on page above.

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Formulas

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width "W" for a 16:10 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:9 screens:

Projection Formulas:

- NP01FL:** C = 0.7426W – 1.33
- NP02ZL:** C(Wide) = 1.0885W – 1.798 ----- C(Tele) = 1.4225W – 1.795
- Standard:** C(Wide) = 1.3743W – 2.022 ----- C(Tele) = 1.8319W – 2.015
- NP03ZL:** C(Wide) = 1.7992W – 2.830 ----- C(Tele) = 2.8325W – 2.840
- NP04ZL:** C(Wide) = 2.7275W – 4.830 ----- C(Tele) = 4.3620W – 4.850
- NP05ZL:** C(Wide) = 4.3259W – 7.625 ----- C(Tele) = 6.5228W – 7.645

Definitions:

- W = Image Width
- H = Image Height (size)
- C = Throw distance

16:9 Screen Formulas:

- W = H x 16/9
- H = W x 9/16
- Screen Diagonal = W x 18.358/16

Note: Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

Distance Chart for popular 16:10 images on a 16:9 screen

Screen Size (16:9)			Image Size (16:10) on a (16:9) screen			Rear Lens	Zoom Lenses					
Diagonal	Width(H)	Height (V)	Diagonal	Width(W)	Height (H)	NP01FL	Standard	NP02ZL	NP03ZL	NP04ZL	NP05ZL	
inches	inches	inches	inches	inches	inches	inches	0.8:1	1.5 - 2.0:1	1.18 - 1.54:1	1.94 - 3.07:1	2.98 - 4.77:1	4.62 - 7.02:1
92	80	45	85	72	45	58	108 - 145	85 - 112	141 - 224	213 - 344	337 - 516	
100	87	49	92	78	49	63	118 - 158	93 - 122	153 - 244	233 - 375	368 - 563	
106	92	52	98	83	52	67	126 - 168	99 - 129	163 - 259	247 - 398	391 - 598	
110	96	54	102	86	54	70	130 - 174	103 - 134	169 - 269	257 - 414	406 - 621	
119	104	59	111	94	59	76	142 - 190	112 - 147	184 - 293	280 - 451	443 - 677	
123	107	60	113	96	60	78	145 - 194	115 - 150	188 - 299	286 - 460	452 - 691	
133	116	65	123	104	65	85	157 - 210	124 - 162	204 - 324	310 - 499	490 - 749	
135	118	66	125	106	66	86	160 - 213	126 - 165	207 - 329	315 - 507	498 - 761	
159	139	78	147	125	78	NA	189 - 252	149 - 195	246 - 390	373 - 600	590 - 901	
161	140	79	149	126	79	NA	192 - 256	151 - 198	249 - 395	378 - 608	598 - 912	
229	200	113	213	181	113	NA	275 - 367	217 - 283	357 - 566	543 - 871	858 - 1308	
275	240	135	255	216	135	NA	329 - 438	260 - 339	427 - 677	650 - 1042	1027 - 1564	
367	320	180	340	288	180	NA	439 - 585	347 - 452	571 - 903	868 - 1391	1372 - 2088	
459	400	225	425	360	225	NA	550 - 732	435 - 566	714 - 1130	1086 - 1740	1716 - 2612	
490	427	240	453	384	240	NA	587 - 781	464 - 604	762 - 1205	1159 - 1856	1831 - 2787	

Note: For screen sizes not indicated on the projection tables, use the formulas on page above.

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Formulas

The Projection Formulas use the image width for calculation. Image height is the same for all aspect ratios, only horizontal image size varies when using a 16:10 aspect ratio screen. For proper projector placement, determine the image width for a desired screen size. Use the Screen Formulas below to calculate all screen dimensions. Plug in the image width "W" for a 4:3 aspect ratio image in the Projection Formulas.

Refer to the diagrams (page 5) and charts below for popular screen sizes 16:9 screens:

Projection Formulas:

- NP01FL:** C = 0.995W – 1.33
- NP02ZL:** C(Wide) = 1.453W – 1.798 ----- C(Tele) = 1.895W – 1.795
- Standard:** C(Wide) = 1.838W – 2.022 ----- C(Tele) = 2.447W – 2.015
- NP03ZL:** C(Wide) = 2.389W – 2.830 ----- C(Tele) = 3.775W – 2.840
- NP04ZL:** C(Wide) = 3.632W – 4.830 ----- C(Tele) = 5.815W – 4.850
- NP05ZL:** C(Wide) = 5.747W – 7.625 ----- C(Tele) = 8.732W – 7.645

Definitions:

- W = Image Width
- H = Image Height (size)
- C = Throw distance

4:3 Screen Formulas:

- W = H x 4/3
- H = W x 4/3
- Screen Diagonal = W x 5/4

Note: Tilting the front of the projector or down by more than 45° from level could reduce lamp life by up to 20%.

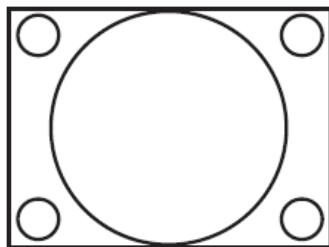
Distance Chart for popular 4:3 aspect ratios on a 16:9 screen

Screen Size (16:9)			Screen Size (4:3)			Rear Lens	Zoom Lenses					
Diagonal	Width(H)	Height (V)	Diagonal	Width(H)	Height (V)	NP01FL	Standard	NP02ZL	NP03ZL	NP04ZL	NP05ZL	
inches	inches	inches	inches	inches	inches	0.8:1	1.5 - 2.0:1	1.18 - 1.54:1	1.94 - 3.07:1	2.98 - 4.77:1	4.62 - 7.02:1	
49	43	24	40	32	24	30	57 - 76	45 - 59	74 - 118	112 - 181	177 - 271	
73	64	36	60	48	36	46	86 - 115	68 - 89	112 - 178	170 - 274	269 - 410	
92	80	45	75	60	45	58	108 - 145	85 - 112	141 - 224	213 - 344	337 - 516	
100	87	49	82	65	49	63	118 - 158	93 - 122	153 - 244	233 - 375	369 - 563	
106	92	52	87	69	52	67	126 - 168	99 - 130	163 - 259	247 - 398	391 - 598	
110	96	54	90	72	54	70	130 - 174	103 - 134	169 - 269	257 - 414	406 - 621	
120	105	59	98	78	59	76	142 - 190	112 - 147	185 - 293	280 - 451	443 - 677	
122	107	60	100	80	60	78	145 - 194	114 - 150	188 - 299	286 - 460	452 - 691	
133	116	65	108	87	65	85	157 - 210	124 - 162	204 - 324	310 - 499	490 - 749	
135	117	66	110	88	66	86	160 - 213	126 - 165	207 - 329	315 - 507	498 - 761	
159	139	78	130	104	78	NA	189 - 252	149 - 195	246 - 390	373 - 600	590 - 901	
161	140	79	132	105	79	NA	192 - 256	151 - 198	249 - 395	378 - 608	598 - 912	
230	201	113	188	151	113	NA	275 - 367	217 - 284	357 - 566	543 - 871	858 - 1308	
275	240	135	225	180	135	NA	329 - 438	260 - 339	427 - 677	650 - 1042	1027 - 1564	
367	320	180	300	240	180	NA	439 - 585	347 - 452	571 - 903	868 - 1391	1372 - 2088	
459	400	225	375	300	225	NA	550 - 732	435 - 566	714 - 1130	1086 - 1740	1716 - 2612	
490	427	240	400	320	240	NA	587 - 781	464 - 604	762 - 1205	1159 - 1856	1831 - 2787	

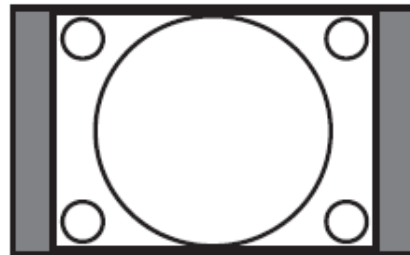
Note: For screen sizes not indicated on the projection tables, use the formulas on page above.

Input Signal Aspect Ratio

4:3



4:3 image on a 16:9 screen

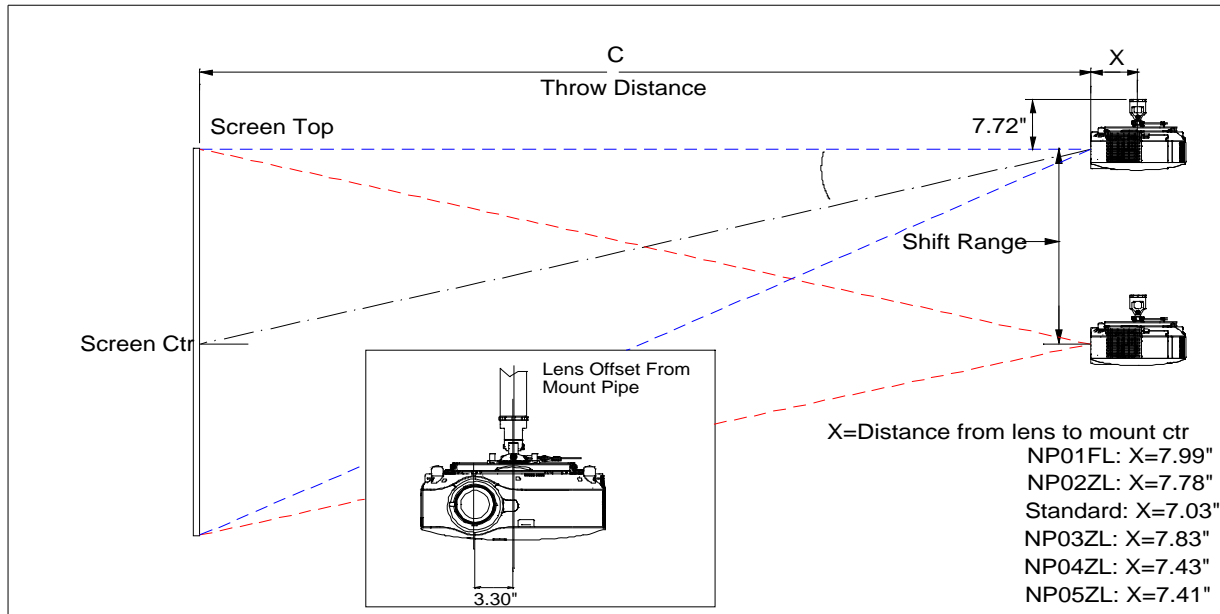


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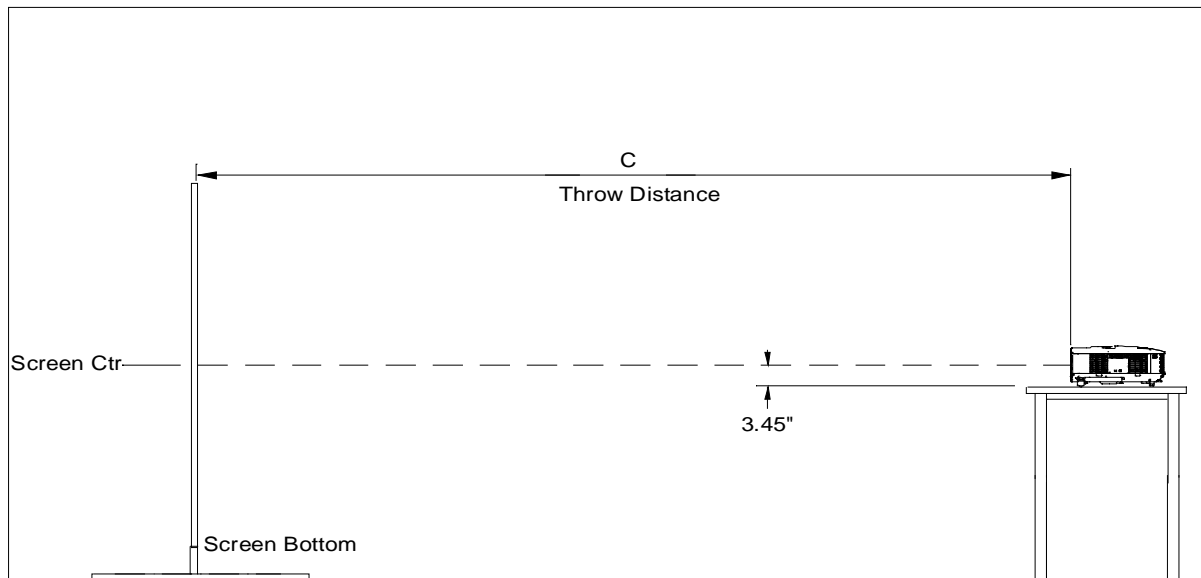
Projection Distance and Screen Size for Ceiling Mount and Desktop

The following shows the proper relative positions of the projector and screen. Refer to the table to determine the position of installation. Distances are in inches. For millimeters multiply by 25.4.

Ceiling Mount Installation



Rear Projection Desktop Installation



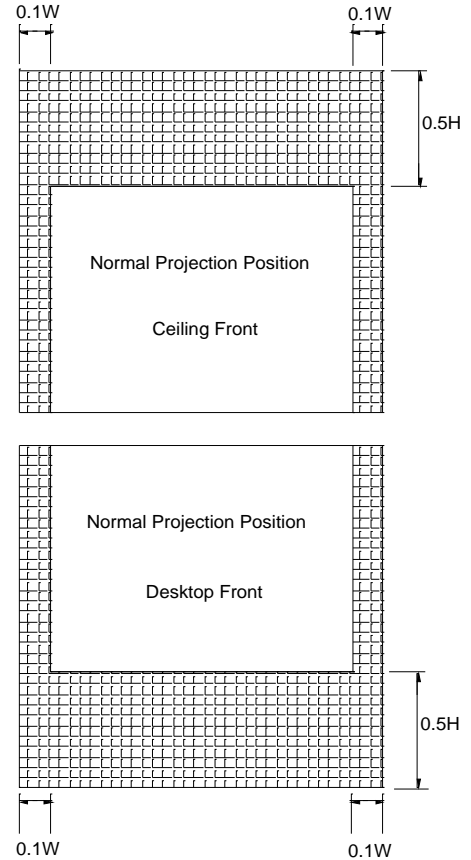
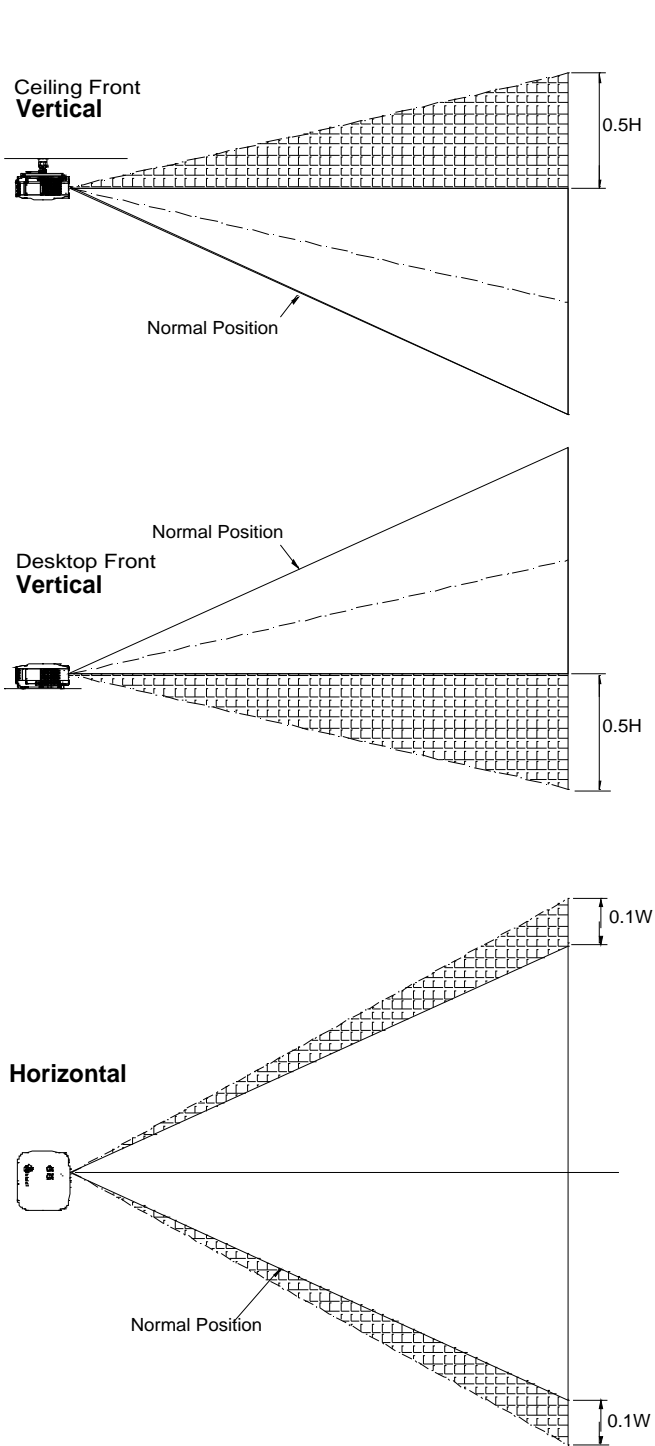
Note: Lens shift feature is not available with NP01FL (rear lens) NP01FL should be used only for "zero degree" / "no-offset" applications.

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Lens Shift Adjustable Range



Lens Shift Range for Desktop and Ceiling Mount Application

The diagram below shows the location of the image position in the lens. The lens can be shifted within the shaded area as shown using the normal projection position as a starting point.

Note: Lens shift feature is not available with NP01FL (rear lens). NP01FL should be used only for "zero degree" / "no-offset" applications.

Maximum Possible Range for Standard Lens/NP02ZL/NP03ZL/NP04ZL/NP05ZL:

Up: 0.5V
 Right: 0.10H
 Left: 0.10H
 (H: width of projected image, V: height of projected image)

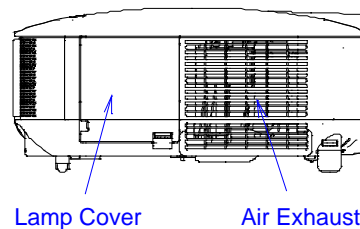
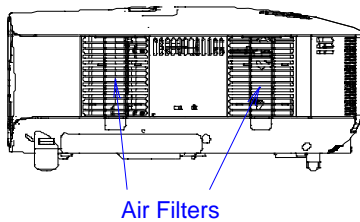
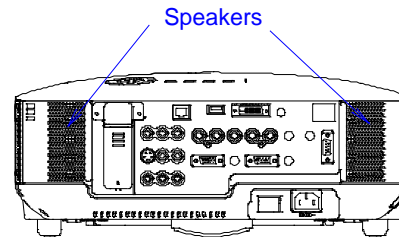
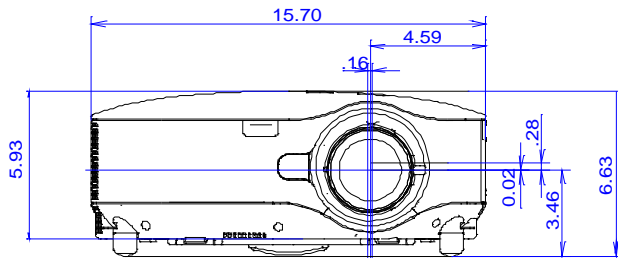
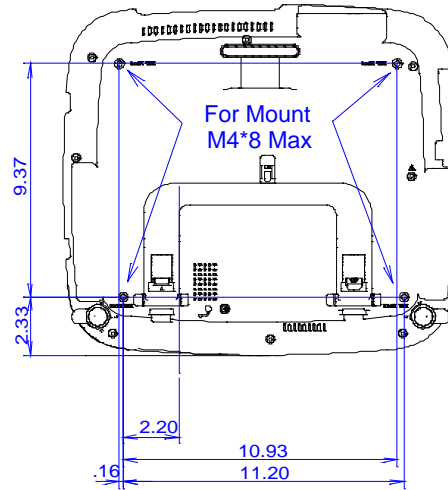
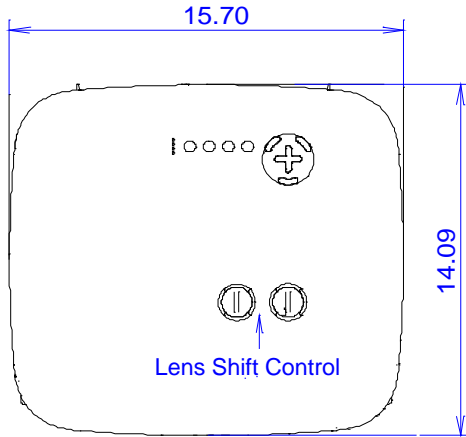
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Cabinet Dimensions

The following diagrams show the cabinet dimensions for the NP3151. Dimensions are in inches. For millimeters multiply by 25.4.



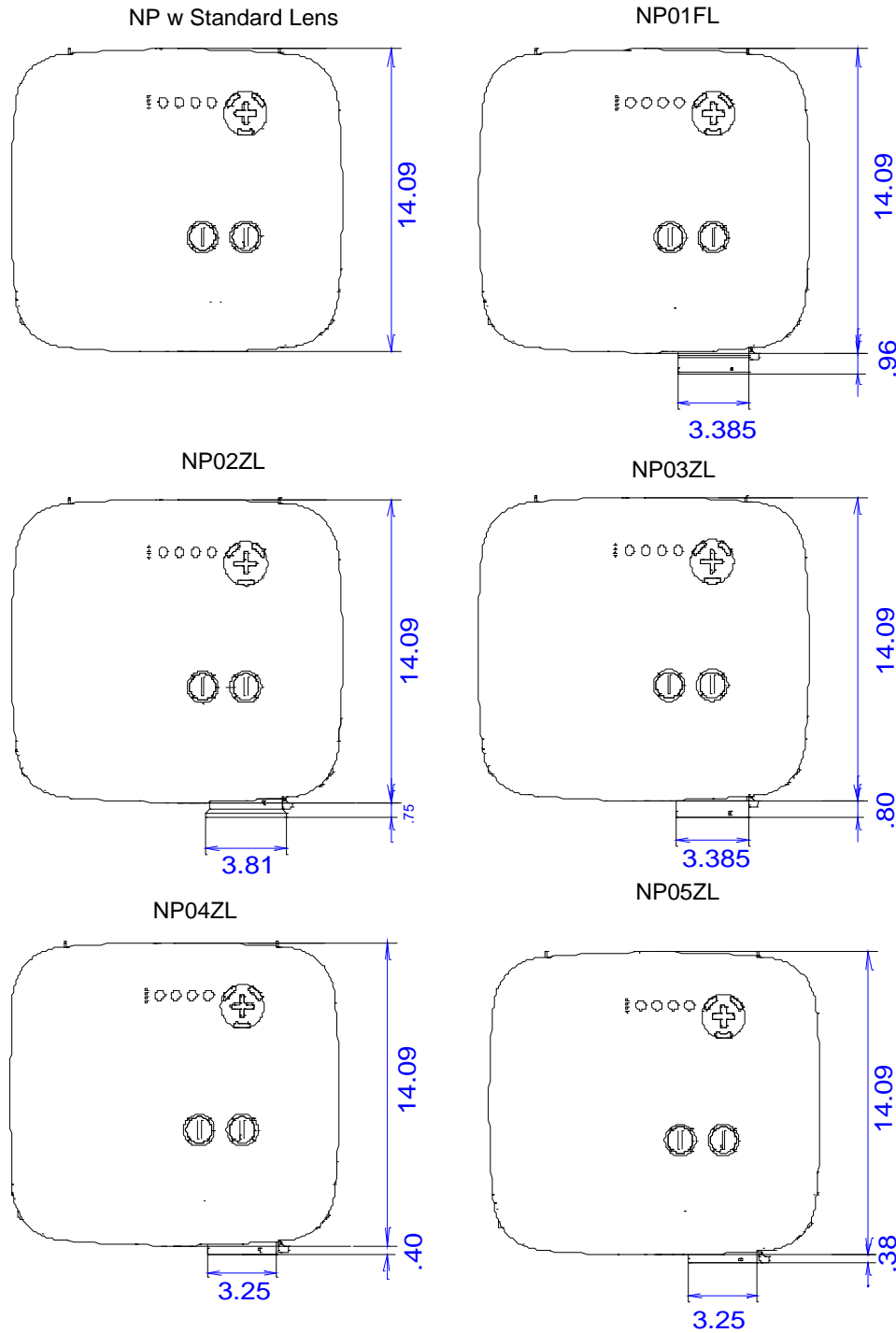
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Lens Dimensions

The following drawings show the added dimensions for the optional lenses. Dimensions are in inches. For millimeters multiply by 25.4.



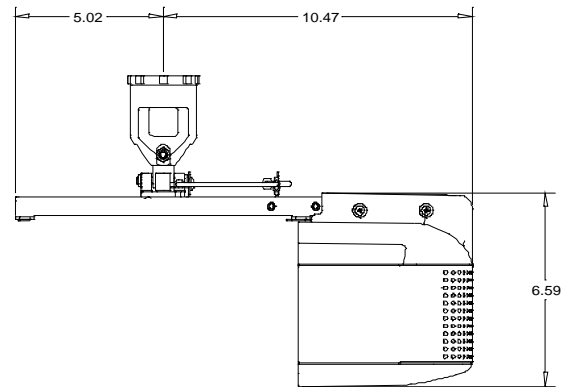
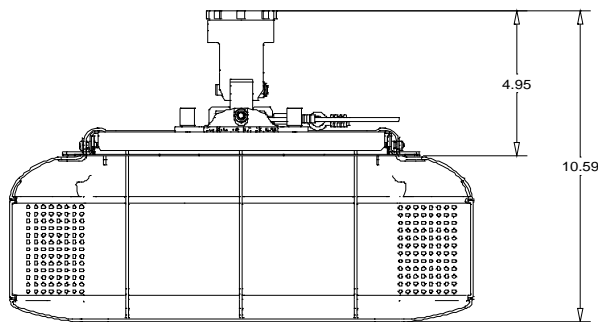
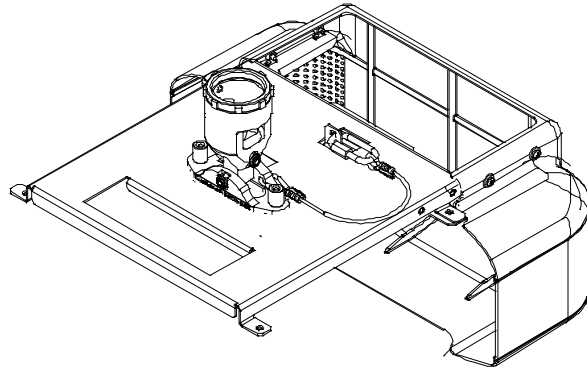
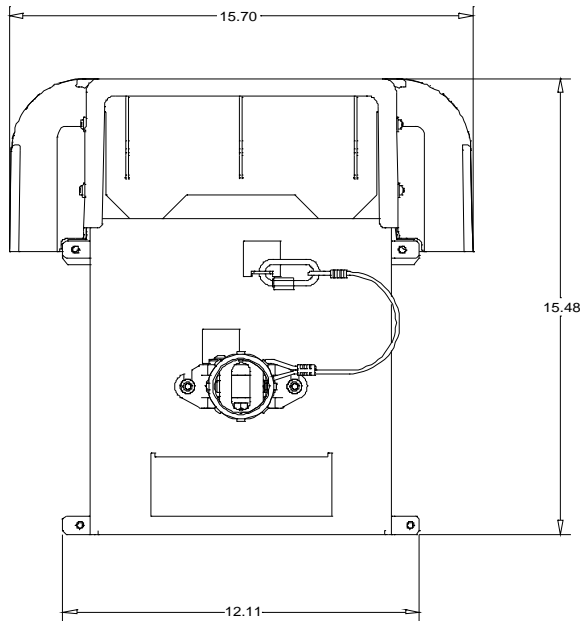
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Optional Ceiling Mount Dimensions (Model #: NP1000CM)

The following diagrams show ceiling mount dimensions for the NP3151. Dimensions are in inches. For millimeters multiply by 25.4.



POLE MOUNT WITH I/O COVER

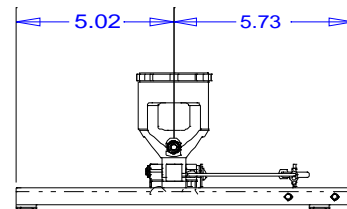
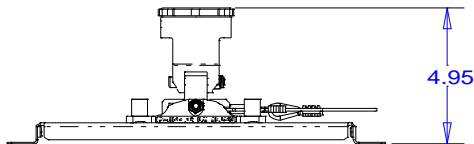
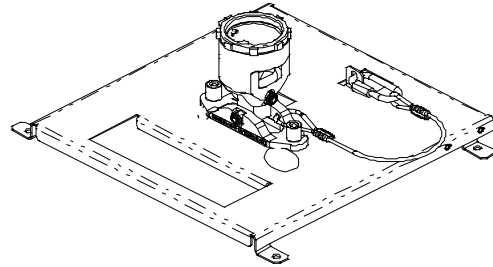
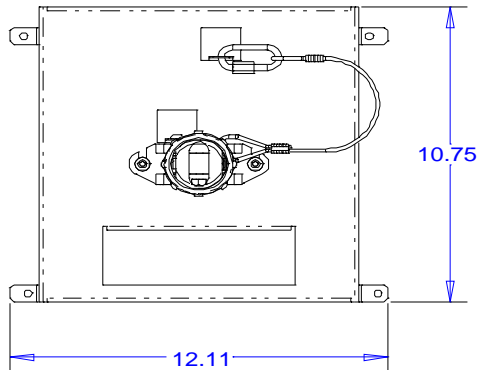
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Optional Ceiling Mount Dimensions (Model #: NP1000CM) (continued)

The following diagrams show ceiling mount dimensions for the NP3151. Dimensions are in inches. For millimeters multiply by 25.4.

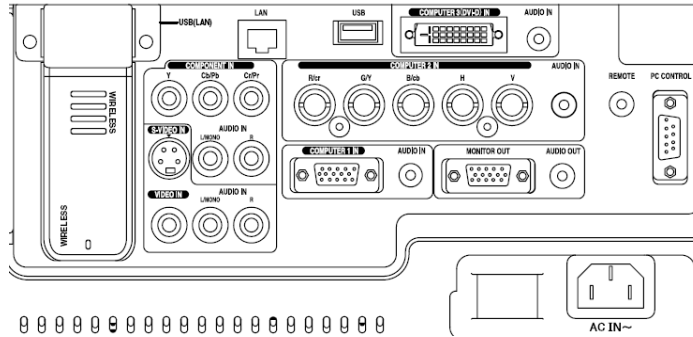


POLE MOUNT W/O I/O COVER

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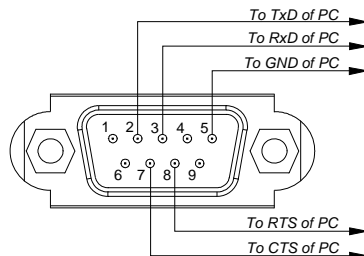
PC Control Codes

Function	Code Data
POWER ON	02H 00H 00H 00H 00H 02H
POWER OFF	02H 01H 00H 00H 00H 03H
INPUT SELECT COMPUTER 1	02H 03H 00H 00H 02H 01H 01H 09H
INPUT SELECT COMPUTER 2	02H 03H 00H 00H 02H 01H 02H 0AH
INPUT SELECT COMPUTER 3	02H 03H 00H 00H 02H 01H 1AH 22H
INPUT SELECT COMPONENT	02H 03H 00H 00H 02H 01H 10H 18H
INPUT SELECT VIDEO 1	02H 03H 00H 00H 02H 01H 06H 0EH
INPUT SELECT S-VIDEO	02H 03H 00H 00H 02H 01H 0BH 13H
INPUT SELECT VIEWER	02H 03H 00H 00H 02H 01H 1FH 27H
INPUT SELECT NETWORK	02H 03H 00H 00H 02H 01H 20H 28H
PICTURE MUTE ON	02H 10H 00H 00H 00H 12H
PICTURE MUTE OFF	02H 12H 00H 00H 00H 14H
SOUND MUTE OFF	02H 13H 00H 00H 00H 15H
ON SCREEN MUTE ON	02H 14H 00H 00H 00H 16H
ON SCREEN MUTE OFF	02H 15H 00H 00H 00H 17H
ASPECT RATIO (4:3 Screen)	
4:3	03H 10H 00H 00H 05H 18H 00H 00H 00H 00H 30H
LETTERBOX	03H 10H 00H 00H 05H 18H 00H 00H 01H 00H 31H
WIDESCREEN	03H 10H 00H 00H 05H 18H 00H 00H 02H 00H 32H
ZOOM	03H 10H 00H 00H 05H 18H 00H 00H 03H 00H 33H
ASPECT RATIO (16:10 or 16:9 Screen)	
4:3 WINDOW	03H 10H 00H 00H 05H 18H 00H 00H 00H 00H 30H
LETTERBOX	03H 10H 00H 00H 05H 18H 00H 00H 01H 00H 31H
WIDESCREEN	03H 10H 00H 00H 05H 18H 00H 00H 02H 00H 32H
4:3 FILL	03H 10H 00H 00H 05H 18H 00H 00H 03H 00H 33H
AUTO ADJUST	02H 0FH 00H 00H 02H 05H 00H 18H

Cable Connection

Communication Protocol:

- Baud Rate: 38400 bps (for cable lengths longer than 20', it is recommended changing to 9600 bps in setup menu)
- Data Length: 8 bits
- Parity: No Parity
- Stop Bit: One bit
- X on/off: None
- Communications: Full duplex



PC Control Connector (D-Sub 9P)

NOTE: Pins 1, 4, 6, and 9 are used inside the projector.

Jumper "Request to send" and "Clear to Send" together on both ends of the cable to simplify cable connection.